

NAVY PROGRAMS

Joint Mission Planning System (JMPS)

The Joint Mission Planning System (JMPS) will provide basic mission planning capability for support of military aviation operations supporting unit-level mission planning of all phases of military flight operations, including fixed and rotary wing aircraft, weapons, and sensors, including precision guided munitions (PGMs), cruise missiles, and unmanned aerial vehicles. It will provide necessary mission data for the aircrew and will also support the downloading of data to electronic Data Transfer Devices for transfer to aircraft and weapon systems. A JMPS for a specific aircraft type will consist of the basic operating framework, common software components, and a basic mission planner, mated with a software module called a Unique Planning Component (UPC). UPCs are to be provided primarily by aircraft programs and computer hardware is to be provided by the Services.

As a cooperative development between the Air Force and Navy, JMPS is being built using the spiral development process for expansion of mission planning capabilities. JMPS Version 1.0 (JV1) provides capabilities for basic flight planning, building initially on the functionality of the existing Portable Flight Planning Software (PFPS) used currently by all the Services. JMPS Combat One (JC1), the first operational JMPS version to be fielded, will add PGM planning capability to JV1; enable mission planning in a networked, server environment; enable “walkaway” mission planning; interface with critical data sources (weather, threat data, Strike Planning Folder); and provide Global Positioning System (GPS) functions. It is Defense Information Infrastructure Common Operating Environment (DII COE) compliant with hardware, principally of commercial off-the-shelf computers, provided separately by each Service.

The JMPS program began in 1997. Logicon, now known as Northrop Grumman Information Technology (NGIT) was selected to develop the JV1 framework and common component software. NGIT is also delivering a Generic UPC and a Software Development Kit that can be used by independent developers to develop aircraft-specific and other common UPCs.

Development of JV1 is proceeding in a series of five Beta releases, each with added functionality and culminating in the full functionality of a basic mission planning system. Beta 5.2, the first JMPS release to have all the functionality of JV1, was released on September 23, 2002. The scheduled November 15, 2002 release of Beta 6.0, was delayed to allow time to fix problems discovered during developmental tests on Beta 5.2. Beta 6.0 will be the end product of the JV1 contract and is now scheduled for a February 7, 2003 release.

Parallel activity under a separate Navy contract with NGIT has begun to develop JC1, which augments JV1 with crypto key support, GPS almanac capability, and other functions. When integrated with UPCs for PGMs, F-14, F/A-18, and E-2C, JC1 will be the planning system to support carrier-based aircraft. JC1 is scheduled to enter Operational Test & Evaluation (OT&E) in September 2003 and be fielded by March 2004.



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TEST & EVALUATION ACTIVITY

DOT&E approved a Test and Evaluation Master Plan (TEMP) for the JMPS program in June 1999; however, at that time mission planning operational requirements, the JMPS design, and

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the JMPS development schedule were not fully known. Consequently, test resource requirements, test design, and test implementation schedules could not be fully defined. An update to the TEMP was required within one year, but has not yet been submitted for OSD approval.

OT&E consists of combined Developmental Test (DT)/Operational Test, followed by dedicated OT&E of each JMPS suite for particular aircraft types. The DT/Operational Test activity includes evaluations by the JMPS Test Team of each Beta release and feedback to the developing contractor. To date, four JV1 Beta releases have occurred. Air Force Operational Test and Evaluation Center (AFOTEC) conducted an Operational Assessment (OA) on JV1 Beta 4 from October through December 2001. In October 2002, Operational Test and Evaluation Force (OPTEVFOR) monitored an enhanced "DT Assist" evaluation of Beta 5.2. The DT Assist was conducted at Naval Air Warfare Center Weapons Division China Lake and Pt. Mugu, Marine Air Wing Test Squadron One, and Space and Naval Warfare System Center's C4I Office in Philadelphia, using fleet personnel.

OT&E of JC1 will be performed by OPTEVFOR at the various test sites, followed by testing at field/fleet sites. Tests will include developing end-to-end mission plans and analyzing them for accuracy and usability. Field/fleet testing will include in-flight verification of JMPS products using test sorties and test crews.

TEST & EVALUATION ASSESSMENT

AFOTEC focused on security, interoperability, DII COE compliance, and software performance during their OA of JV1 Beta 4. Operational aircrews employed the software in a variety of scenarios to assess progress toward meeting mission planner needs. Overall, JV1 was found to be making satisfactory progress toward meeting mission planners' needs, leading to a rating of potentially effective. Users were able to plan flight routes using both graphics tools and text inputs. Charts, imagery and airfield information could be displayed and manipulated effectively.

Because of the following concerns raised during the OA, AFOTEC rated JV1 as potentially not suitable:

- Beta 4 was slower than currently fielded software (PFPS).
- DII COE software was extremely cumbersome, difficult to install, and may preclude users from loading some unit-level applications.
- JV1 Beta 4 fails interoperability certification because the system does not provide error detection on Air Tasking Orders.
- System administrators' workload will increase over current planning systems.
- Aircraft route file sizes may exceed the 1.44-megabyte limit of the standard floppy disk, making a transfer between systems difficult.
- Progress toward defining and meeting security requirements and implementing security features was unsatisfactory.

However, it was noted that all the issues reported were amenable to being fixed before the end of development.

Beta 5.0 was released by NGIT on May 27, 2002. A Navy team, along with a team from the Air Force, conducted tests on the Beta release, using test cases to validate compliance with the System/Subsystem Specification. The testing took six weeks. Priority for the test was given to mapping, route planning, and the threat data interface. Among other problems, Beta 5.0 was found to be too slow in operation. Much of the recent activity has been directed at working on this problem and on correcting stability problems (i.e., crashes). At the end of July 2002, there were 224 deficiency reports written against the Beta release. Of these, the majority of high priority deficiency reports were against the mapping tools.

The integration of UPCs with JC1 is likely to be a very complicated task. Development of UPCs is being conducted in parallel with the basic JC1 system and on very aggressive schedules. Although NGIT is responsible for JC1 core capabilities, the aircraft UPC developers will be responsible for the performance of the final planning systems for operational use.

The planned test program for JV1 and JC1 appears to be adequate to determine effectiveness and suitability. However, the details of these plans have yet to be documented in approved TEMPs or test plans. Considering the status of JV1 and JC1, a TEMP for JC1 is overdue. Drafts have been prepared and circulated; however, further progress is dependent on resolving issues with the Navy and Air Force Operational Requirements Documents, which are also overdue for completion.